Defining Assistive Technology (AT)

• Assistive technology – “Any item, piece of equipment, product system, whether acquired commercially, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities.”

• Assistive technology service – “Any service that directly assists an individual with a disability in the selection, acquisition, or use of an assistive technology device.”
Disabilities

• A disability is a condition or function judged to be significantly impaired relative to the usual standard of an individual or group.
• The term is used to refer to individual functioning, including physical impairment, sensory impairment, cognitive impairment, intellectual impairment mental illness, and various types of chronic disease. (http://www.disabled-world.com)

Types of Disabilities

• Mobility and Physical
  – Upper limb disability
  – Lower limb disability
  – Manual dexterity
  – Coordination with different organs of the body
  – In-born, acquired with age, disease
• Spinal Cord Disability
  – Complete or incomplete
  – Typically caused by severe accidents
• Head Injuries – Brain Disability
  – Traumatic Brain Injury (TBI); external force (crashes, gunshot wounds, assaults, falling, etc.)
  – Acquired Brain Injury (ABI); acquired after birth, external force PLUS cerebral vascular accidents (strokes) and loss of oxygen
Types of Disabilities

- **Vision Disability**
  - Range from minor to various serious conditions, including blindness

- **Hearing Disability**
  - Completely or partially deaf
  - Evident at birth or developing later in life (meningitis)

- **Cognitive or Learning Disabilities**
  - Dyslexia, speech disorders, etc.

- **Psychological Disorders**
  - Affective disorders: mood disorders
  - Personality disorders: deeply inadequate patterns of behavior and thought
  - Schizophrenia: disturbances of thinking, mood, and behavior

Types of Disabilities

- **Invisible Disabilities**
  - Not immediately apparent to other; estimated that 10% of people in the U.S. have a medical condition considered an invisible disability.
Children 3 to 21 years old in federally supported programs by type of disability: 2006-07

13.6% of all children in public school

Specific Learning Disabilities

Categories of Assistive Technologies

• **Low technology**: inexpensive devices that are simple to make and easy to obtain. Such as shoe horn, sock aide, “reacher”, raised toilet seat, cane, etc.

• **High technology**: generally more expensive, more difficult to make and harder to obtain. Such as power wheelchair, computer related, electronic devices such as PDA, vehicle modifications, etc.
Why Use AT?

- Disabled person: make things **possible**
- Person without disability: make things **easier**
  - Conserve energy
  - Preserve and protect joints integrity
  - Preserve and protect muscles integrity
  - Pain management: related to musculoskeletal problems
  - Increase or maintain personal level of independence

Personal Care Devices

- Bidet Systems
- Electric leg bag emptier
- Portable Rolling shower
- Step in tub
### Mobility Aids

- Ceiling lifts
- Hoyer lifts
- Bath lifts
- Stair lifts
- Inclined platform wheelchair lift

### Environmental Access

- **Door Access:** Automation: Stanley Excess Pro, Keypad door lock/deadbolt lock, remote key access
- **Lighting:** light timers, touch lamps, motion sensor lights
- **Remote Controls:** ceiling fans, gas log fire places, heating and air units
- **Battery operated blinds**
- **Automated sprinkler system**
- **TV remotes:** Universal remotes, large button remotes
- **Telephones:** cell phones, headset, RC phone,
- **Attendant call:** Child monitors, doorbell,
- **Security monitors:** linked to TV
Hard of Hearing

- Phones: amplifiers and alert system
- Smoke detector
- Alarm clocks
- Doorbells: magnification/alert
- TV/Radio: wireless headsets, closed captioning
- Hearing aids

Low Vision

- Hand Held Magnifier
- Close Caption TV: portable (Senseview Duo), desk
- TV screen magnifiers
- Large print keyboard/labels
- Screen readers: Open Book, JAWS
- Newsline: free newspaper reading service
- Books on Tape
- Microsoft Accessibility Options: magnifier, narrator
Computer Access

- Computer related fields of work
- Used as a tool for work or entertainment
- Major source of information

**Computer components**
- Mouse
- Keyboard
- Monitor
- Disk drive

Computer Mice

- Trackball mice
- Touch pads
- Joystick
- Mouth joystick
- Head mice
- Eye gaze
- Touch screen
- Microsoft Accessibility Options
Keyboards

- One handed use
- Space saver/compact keyboards
- Large key keyboards
- Large print keyboard
- Ergonomic keyboard
- Voice recognition
- Onscreen keyboard
- Microsoft Accessibility Options: keystrokes, onscreen keyboard

Monitors

- Large monitor
- Filters
- Display Options: Microsoft Accessibility
Microsoft Computer Accessibility Features

- Magnifier
- Onscreen Board
- Narrator
- Speech Recognition
- Personalization
- Windows Touch
- Keyboard Shortcuts
- Mouse Keys
- Captions, Visual Notifications
- Filter Keys, Sticky Keys

Computer Keyboards
**Voyager**

- Any program on the computer can be placed on the desktop as a button to simplify program startup.

**PocketCoach**

- Audio only prompting system for pocket PCs designed to provide assistance to individuals with cognitive disabilities, such as mental retardation, learning disabilities, traumatic brain injury (TBI), or other disabilities.
- On a Pocket PC, a parent, teacher, or other caregiver can record a series of task instructions or other messages for the individual. The individual can then use Pocket Coach to play back the messages.
Money Coach

- Web browser
- Picture-based search engine
- Email application
- Enhances Internet access for individuals with mental retardation
- Access the web and search for and save sites of interest

Web Trek

- Steven’s Budget
- Paint Brush Hills Apartments
- Colorado Springs Utilities
- Mountain Bell
- Safeway
- Sams Veggie Mart
- Village Inn

Beginning $1,756.00
Spent $587.00

Steven’s $5 = $1,163.00

Add Item
Delete Item
New Budget
Remove Items
Write Checks
EXIT
Augmented & Alternative Communications

Intellikeys Keyboard
Computational will be freely available everywhere—Computation will enter the human world, handling our goals and needs.

We will not need to carry personalized devices around with us.

— Instead, "anonymous" devices, either handheld or embedded in the environment, will bring computation to us, no matter where we are or in what circumstances.

— These devices will personalize themselves in our presence by finding whatever information and software we need.

We will not need to type or click, nor to learn computer jargon.

— Instead, we will communicate naturally, using speech, vision, and phrases that describe our intent, leaving it to the computer to locate appropriate resources and carry out our intent.